I. AMENDMENTS TO THE CLAIMS

The following listing of claims will replace all prior versions of claims in the application.

Listing of Claims:

Claims 1-14. (Cancelled)

~~Claim 16.~~ Claim 15. (Currently Amended) A data communication system, comprising:

a) a first input for receiving data, said data being characterized by a bit time;

b) a second input for receiving data control information;

c) an encoder unit coupled to said first and second inputs, said encoder unit operative to:

i) generate clock information;

ii) process said clock information and said data control information for generating a clock and control signal, said clock and control signal having high and low times in units equal to one said bit time, said clock and control signal being characterized by first and second edges, said first edge having fixed phase and said second edge being phase-modulated;

d) at least one data channel; and

e) a clocking and control channel, said encoder unit operative to transmit said data over said at least one data channel and to transmit said clock and control signal over said clocking and control channel.

~~Claim 17.~~ Claim 16. (Cancelled) ~~A data communication system as defined in claim 16, wherein said clock and control signal is characterized by first and second edges, said first edge having fixed phase and said second edge being phase modulated~~.

~~Claim 18.~~ Claim 17. (Currently Amended) A data communication system as defined in claim 15 ~~claim 16~~, wherein said clocking and control channel is characterized by a clock rate and said at least one data channel carries data multiplexed at a multiplexing cycle rate, said clock rate being substantially equal to said multiplexing cycle rate.

~~Claim 19.~~ Claim 18. (Currently Amended) A data communication system as defined in claim 15 ~~claim 17~~, wherein said first edge carries bit timing information for clock synchronization.

~~Claim 20.~~ Claim 19. (Currently Amended) A data communication system as defined in claim 15 ~~claim 17~~, wherein said second edge carries at least data control information.

~~Claim 21.~~ Claim 20. (Currently Amended) A data communication system as defined in claim 15 ~~claim 17~~, wherein said second edge carries at least data framing data.

~~Claim 22.~~ Claim 21. (Currently Amended) A data communication system as defined in claim 15 ~~claim 17~~, wherein said second edge carries data control information and framing data.

~~Claim 23.~~ Claim 22. (Currently Amended) A data communication system as defined in claim 15 ~~claim 16~~, wherein said data communication system further comprises:

a) a decoder unit for receiving data and the clock and control signal over said data channel and said clocking and control channel, respectively, said decoder unit operative to:

i) extract from said clock and control signal said clock information and said data control information;

ii) process said data on a basis of said clock information and said data control information for generating a data signal;

b) an output for releasing said data signal to a data processing device.

~~Claim 24.~~ Claim 23. (Currently Amended) A data communication system as defined in claim 22 ~~claim 23~~, wherein said data channel is selected from the group consisting of a cable, an optical fiber and an air interface.

~~Claim 25.~~ Claim 24. (Currently Amended) A data communication system as defined in claim 22 ~~claim 23~~, wherein said clocking and control channel is selected from the group consisting of a cable, an optical fiber and an air interface.

~~Claim 26.~~ Claim 25. (Currently Amended) An encoder for use in a data communication system, said encoder connected to at least one data channel and a clocking and control channel, said encoder comprising:

a) a first input for receiving data, said data being characterized by a bit time;

b) a second input for receiving data control information;

c) a processing unit operative to:

i) generate clock information;

ii) process said clock information and said data control information for generating a clock and control signal,

said clock and control signal having high and low times in units equal to one said bit time, said clock and control signal being characterized by first and second edges, said first edge having fixed phase and said second edge being phase-modulated;

d) a first output for transmitting said data over the at least one data channel;

e) a second output for transmitting said clock and control signal over the clocking and control channel.

~~Claim 27.~~ Claim 26. (Currently Amended) A decoder for use in a data communication system, said decoder connected to at least one data channel and a clocking and control channel, said decoder comprising:

a) a first input for receiving data over the at least one data channel, said data being characterized by a bit time;

b) a second input for receiving a clock and control signal over the clocking and control channel, said clock and control signal said clock and control signal having high and low times in units equal to one said bit time, said clock and control signal being characterized by first and second edges, said first edge having fixed phase and said second edge being phase-modulated;

c) a processing unit operative to:

i) extract from said clock and control signal clock information and data control information;

ii) process said data on a basis of said clock information and said data control information for generating a data signal;

d) an output for releasing said data signal to a data processing device.

~~Claim 28.~~ Claim 27. (Currently Amended) A data communication system, comprising:

a) first input means for receiving data, said data being characterized by a bit time;

b) second input means for receiving data control information;

c) encoder means coupled to said first and second input means, said encoder means operative to:

i) generate clock information;

ii) process said clock information and said data control information for generating a clock and control signal, said clock and control signal having high and low times in units equal to one said bit time, said clock and control signal being characterized by first and second edges, said first edge having fixed phase and said second edge being phase-modulated;

d) at least one data channel; and

e) a clocking and control channel, said encoder means operative to transmit said data over said at least one data channel and to transmit said clock and control signal over said clocking and control channel.